

NEWARK INTERNATIONAL AIRPORT
Between the New Jersey Turnpike, U.S.
Routes 1 and 9, and Interstate 78
Newark VICINITY
Essex County
New Jersey

HAER No. NJ-133

HAER
NJ
7-NEARK.V,
1-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Northeast Region
Philadelphia Support Office
U.S. Custom House
200 Chestnut Street
Philadelphia, Pennsylvania 19106

HISTORIC AMERICAN ENGINEERING RECORD
NEWARK INTERNATIONAL AIRPORT

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1-
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Location: Between the New Jersey Turnpike, U.S. Routes 1 and 9, and Interstate 78; Newark, Essex County, New Jersey
UTM: 18.570400.4506340
Quad: Elizabeth, New Jersey, 1:24,000

Date of Construction: 1928

Engineers/Architects: James W. Costello, Harry H. Tuttle and others

Present Owner: The Port Authority of New York and New Jersey

Present Use: International and domestic commercial aircraft operation, maintenance, and storage

Significance: Newark International Airport (formerly Newark Metropolitan Airport) is one of the earliest examples of a metropolitan airport. It was the world's busiest airport between 1930 and 1939. It has been linked to many aviation milestones, and was often the testing ground for new aviation safety technologies. For many years, it was the center of airmail service for the region, and continues to be in the top 15 in the world in terms of weight of airmail and cargo shipped each year. Currently, the airport brings over \$11 billion in economic activity to the New York/New Jersey metropolitan region, over \$3 billion of that in wages from the 110,000 jobs derived from airport activity.

Project Information: As part of these measures to modernize, Continental Airlines is planning to demolish Brewster Hangar (Building #55) and replace it with facilities better equipped to handle modern aircraft. This documentation intends to satisfy historical record requirements per an agreement between the Federal Aviation Administration (FAA) and the New Jersey State Historical Preservation Officer (NJSHPO).

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PHYSICAL DESCRIPTION

Newark International Airport lies between the eastern and western branches of the New Jersey Turnpike (between exchange 13A on the eastern branch and exchange 14 on the western), Route I, Route 9, and Interstate 78. It consists of 2027 acres, 880 of which were acquired by the Port Authority of New York and New Jersey since it began operation of the airport in 1948. The focus of the facility is the 425-acre central terminal area. Three terminals A, B, and C radiate from a semi-circle enclosed in which is a central parking area. Terminal A faces outward to the south, terminal B faces outward to the southeast, and terminal C faces outward to the northeast. Each main terminal building is approximately 800 by 165 feet. Each has an upper departures level, a lower arrivals level, and a ground level which runs under the arrivals and departures roadways as well as the other levels of the building. Terminal A has twenty-seven gates and terminal B has twenty-three gates. Each of these terminals branches out to three circular satellite aircraft gate buildings. Terminal C has two linear concourses that accommodate 41 gates. A third section of the terminal, C-3, accommodates two gates. Finally, a fourth section of terminal C has twenty-eight commuter hardstand gates. There is also an international arrivals facility between two branches of terminal B.

On the southeast side of the central terminal area are the runways. Closest to the terminal area is runway 4L-22R. The runway is ten thousand feet long and one hundred fifty feet wide. It is grooved for improved traction in wet weather. It is parallel to and nine hundred fifty feet east of runway 4L-22R. Runway 4R-22L is eleven thousand feet long and one hundred fifty feet wide. It serves as the airport's primary departure runway. Beyond runways 4 and 22 is parking lot H. Parking lot F is to the southwest of runway 4L-22R and parking lot G is on the northeast end of runway 4L-22R. Runway 11-29, sixty-eight hundred feet long and one hundred fifty feet wide, is to the north of the central terminal area. Connecting and surrounding the runways is a complex network of more than twelve miles of taxiways and fourteen miles of roadways. A monorail also runs throughout the airport, connecting parking areas D and E, the three terminals, and the rental car complex.

Off the terminal C side of the central terminal facility stands the control tower. Near the control tower is the Port Authority Administration building, a four-level modernistic structure. Near the central terminal facility is a Marriott hotel with 590 rooms. To the southwest of the central terminal area is a cluster of buildings. They include the ground support equipment building, the Federal Express Metroplex Building, the 25-acre United Parcel Service Building, the Chelsea Flight Kitchen, the Federal Express Cargo Building, the 36,000-square foot United States Postal Service Building and the Monorail Maintenance building. Further from the central terminal facility in this direction is a large aviation fuel storage area with a tank capacity of approximately ten million gallons fed by an underground pipeline from Linden, New Jersey refineries. In close proximity to the central terminal area to the west is another building cluster consisting of the Hertz rental car administration building, the Avis rental car parking area, the National rental car parking deck, and a Port Authority maintenance building. Another cluster of buildings lies to the north of the central terminal area. Within this group of buildings are the UAL Flight Kitchen, Morris Industries, and the New Jersey State Highway Department. To the northeast of the central terminal area is another group of buildings. Within this group is the Sky Chef Inc. building, the UAL hangar, a multi-tenant cargo building, a signature hangar, the 80,000-square foot Continental hangar building, the Brewster Hangar, Aris Cargo Buildings A and B, as well as an aircraft parking area.

HISTORY

In the years following Wilbur and Orville Wright's historic first flight in Kitty Hawk, North Carolina, aviation became an avid interest of the general public in the United States and around the world. Some thought it was just a craze, including one reader of the Newark Evening News who wrote to the editor, "There is no commercial aviation in sight... Forget the airport! That craze will soon die out."¹ But many business, industrial, and government leaders saw things differently.

Aviation was first brought to Newark by the United States Post Office in an attempt to deliver mail via air courier to Manhattan in the shortest period of time. The delivery site chosen as the most efficient was old Heller Field in North Newark, chosen primarily for its close proximity to the city. The "airport", little more than a patch of ground bound by the Morris Canal, Second River, and a branch of the Erie Railroad, began shipping and receiving airmail shipments in December of 1919. Landing at Heller Field was made difficult by the surrounding canal, river, and railroad. By May of 1920, there had been so many accidents, many with fatalities, that the U.S. Post Office shut the field down. Seven years later, the idea of an airport in Newark was reborn, one month after Charles Lindbergh returned to the United States after his epic trans-Atlantic flight.²

Work began on Newark Metropolitan Airport in January of 1928, after Secretary of Commerce Herbert Hoover's 1927 fact-finding committee had selected Port Newark as one of the most desirable airport locations in the New York/New Jersey metropolitan area.³ The Chief Engineer of the project was James W. Costello, assisted by Mahlon W. Parson Jr. At the time the airport was built, the Port of Newark Supervisor was Peter J. O'Toole Jr., and the City Aviation Engineer/Airport Manager was Charles S. Dion.⁴ After nine months of construction and engineering on the marsh (which included raising the level of the ground six feet, diverting four miles of creeks for surface drainage, and installing six miles of subsurface drain and sewer pipes),⁵ the airport opened October 1, 1928.⁶ Headlines at the time hailed "The Construction of the Newark Airport from Mud an Engineering Epic"⁷ Dry fill of the marshland incorporated dirt as well as seven thousand discarded Christmas trees and two hundred safes donated by a local junk dealer. Its sixteen hundred-foot asphalt-topped runway was the first hard-surfaced strip on any commercial airport in the country.⁸ The cost of the development of the initial 68 acre site cost the city of Newark \$1.75 million dollars.⁹ The first aircraft landing on the runway occurred before the official opening of the airport in August of 1928 and was a four-passenger monoplane piloted by ex-Marine Pete Bransom.¹⁰

¹ Unknown author, "The History of Newark Airport," (written for the dedication of the new terminal), 29 July 1953.

² E.B. Berlinut, "World's Mightiest Airport," Unknown Newspaper, 29 March 1933.

³ "History of Newark Airport", 1953.

⁴ Unknown Author, "Newark Airport Holds First Rank In East," Unknown Newspaper, Unknown Date.

⁵ Ibid.

⁶ Port Authority of New York and New Jersey. *Newark International Airport*. Available on the world wide web (www), <<http://www.panynj.gov/aviation/ehismain.htm>> 3 January 2000.

⁷ Owen L. Scott, "Aviation's Greatest Gain in 1928 Was Spread of 'Air-Mindedness'," Newark Evening News, January 1934.

⁸ "History of Newark Airport", 1953.

⁹ Scott, 1934.

¹⁰ "History of Newark Airport", 1953.

In 1929, passenger service was initiated and airmail operations were moved from Hadley Field in New Brunswick to Newark.¹¹ With the move of the mail operations came the move of the four airlines that had operated out of New Brunswick: Colonial Airways, Transcontinental and Western Airways, National Air Transport, and Pitcairn Aviation.¹² In 1929, the airport serviced three hundred twenty-two thousand pounds of mail, forty-seven thousand pounds of express mail, and four thousand passengers.¹³ By fall of 1930, Newark was the busiest airport in the world.¹⁴ Flights left hourly for Washington D.C., sometimes completely booked three days in advance.¹⁵ In 1938, the airport saw over five million pounds of mail, almost three million pounds of express mail, and over three hundred fifty thousand passengers.¹⁶

In the early years of the airport, it was used by such aviation personalities as Charles Lindbergh, Amelia Earhart, Lady Mary Heath, and Clarence Chamberlain.¹⁷ Flights that broke or established several passenger transport, airmail transport, and trans-continental speed records originated from or ended at Newark Airport. Captain Eddie Rickenbacker landed at Newark in 1934 to set a new passenger transport record of thirteen hours, two minutes from Los Angeles and later that year bettered that record by fifty-nine minutes. Jack Frye set the Los Angeles-Newark airmail speed record that same year by making the trip in eleven hours, thirty-one minutes. In 1935, Amelia Earhart flew non-stop from Mexico City to Newark in fourteen hours and nineteen minutes. In 1936, Howard Hughes broke the west-east record by making the trip from Burbank, California to Newark in nine hours and twenty-six minutes; in 1937, he bettered that time by two hours.¹⁸

Meanwhile, the airport continued to grow. A new administration building was built in 1934 for temporary use by Army pilots who flew the mail flights. Eventually, this building would become the central passenger terminal. Prior to the change, individual airlines operated their terminals from their hangars.¹⁹ In the early 1940s, capital investment in the airport continued. The runways were lighted, an approach light system was developed, and equipment was installed to facilitate flight in bad weather.²⁰ By 1940, the airport was serving almost one-half million passengers a year, and handling almost 6 million pounds of mail.²¹

With the outbreak of World War II, the United States Army Air Corps took over operation of the airport and it became integral to Allied operations. The airport was the base for the Ferry Command, whose function was much like it sounds: to "ferry" supplies such as food and ammunition to Allied forces overseas.²² Furthermore, the Brewster Airplane Company, which was housed in Brewster Hanger (recently known as Building #55) in the north area of the airport, used the hangar as an assembly site for

¹¹ Unknown Author, "Historic Newark Airport...It All Took Wing in 1927," Trenton Evening Times, 11 September 1973; "History of Newark Airport", 1953.

¹² Ibid.

¹³ "Newark Airport Holds First Rank In East"

¹⁴ Charles Garrity, "Newark Airport Spans 30 Years of Biplane to Jets," New Jersey Star Ledger, 21 September 1958.

¹⁵ "History of Newark Airport", 1953.

¹⁶ "Newark Airport Holds First Rank In East".

¹⁷ "History of Newark Airport", 1953.

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ "Newark Airport Holds First Rank in East".

²¹ "Historic Newark Airport...It All Took Wing in 1927", 1973.

²² Ibid.

the renowned "Buffalo", an early DC3 that saw action at the Battle of Midway.²³

Following World War II, the airport returned to commercial transportation; however, it became increasingly difficult for the City of Newark to keep up with the constantly expanding needs of the airlines and the public. By 1945, the City had invested more than \$20 million in the facility, and taxpayers were spending \$415,000 a year to operate it.²⁴ During the last seven months of 1946, scheduled flights in and out of the airport almost doubled from seventy-eight to one hundred forty-nine. Airline representatives were unhappy about the lack of an on-site eatery for passengers and employees, as well as the shortage of terminal and hangar facilities.²⁵

On March 22, 1948, the City turned the airport over to the Port Authority of New York and New Jersey on a fifty-year lease. The lease required that the Port Authority undertake a major expansion and reconstruction project.²⁶ Specifically, the Port Authority agreed to expand the airport through land acquisition, runway construction, a new passenger terminal, and additional hangars. Safety concerns led to a period of restricted flight activity in 1952. Normal flight activity was not resumed until one runway, Runway 10R-28L, was rehabilitated and two of the three runways were converted into one. The latter runway, Runway 4R-22L, was equipped with electronic, radar, and lighting equipment. These systems (new technologies at the time) were installed to improve the safety of landings and take-offs, at a cost to the Port Authority of nine million dollars.²⁷

Over the years, the Port Authority has invested more than \$1.9 billion dollars in the airport.²⁸ In the early 1950s, an instrument runway (a runway that allows for landings and take-offs using aviation instruments rather than sight during inclement weather) was constructed, along with a new terminal building, an air cargo center²⁹ and a \$1.5 million dollar control tower.³⁰ A large-scale redevelopment of the airport began in 1963, requiring \$400 million from the Port Authority and at least \$10 million from the airlines and service organizations.³¹ In 1973, a new central terminal area was constructed and opened, in addition to the rebuilding and reopening of Runway 4R-22L. Other construction during the 1970s included a new administration building and fuel storage tank farm. In 1989, a two-building maintenance complex opened, and a new International Arrivals Facility was built in 1996.³²

The growth of the physical structures of the airport was mirrored by the increasing size of the services provided. In 1960, the airport served 2.9 million passengers, fifty-eight thousand tons of air cargo, and 10.5 tons of air mail. By 1980, it was 9.2 million passengers, one hundred seven thousand tons of air cargo, and thirty-eight thousand tons of airmail. By 1990, there were 22.3 million passengers, four

²³ Geoffrey Arend, *Air World's Great Airports: Newark 1928-1952*, (New York: Air Cargo News, Inc., 1978).

²⁴ Garrity, 1958.

²⁵ Unknown Author, "Doubled Airport Flights Prove Predictions Right," Unknown Newspaper, 16 September 1946

²⁶ Garrity, 1958.

²⁷ "History of Newark Airport", 1953.

²⁸ <<http://www.panynj.gov/aviation/ehismain.htm>>

²⁹ Ibid.

³⁰ "Historic Newark Airport...It All Took Wing in 1927", 1973.

³¹ Ibid.

³² <<http://www.panynj.gov/aviation/ehismain.htm>>.

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hundred ninety-five thousand tons of air cargo, and sixty-one thousand tons of airmail.³³ The airport currently employs over eighteen thousand people and one hundred ten thousand jobs are derived from airport activity, contributing \$3.3 billion in wages and \$11.3 billion overall in economic activity in the New York/New Jersey economic region. By 1998, 32.5 million passengers, one hundred twenty thousand tons of airmail, and one million tons of air cargo passed through the airport annually.³⁴

³³ Ibid.

³⁴ Ibid.

SOURCES OF INFORMATION/BIBLIOGRAPHY

A. Engineering Drawings

Engineering drawings of several of the airport's buildings can be found in the record depository of the City of Newark at Newark City Hall. The current operational map of the airport is available from the Port Authority of New York and New Jersey. Past engineering drawings and site maps of the airport are available through the Port Authority of New York and New Jersey

B. Historic Views

Historic Views of the airport were obtained from Continental Airlines (Houston, Texas) and were photographed for inclusion in this report.

C. Interviews

No interviews were conducted in the research of the material in this report

D. Bibliography

1. Primary and unpublished sources

"The History of Newark Airport." (*written for the dedication of the new passenger terminal*). 29 July 1953. Found in the newspaper clippings file of the New Jersey Reference archives at the Newark Public Library in Newark, New Jersey under the heading "Newark Airport".

2. Secondary and Published sources

Arend, Geoffrey. *Air World's Greatest Airports: Newark 1928-1952*. New York: Air Cargo News, Inc., 1978.

Berlinut, E.B.. "World's Mightiest Airport." *Unknown Newspaper*. 29 March 1933. Found in the newspaper clippings file of the New Jersey Reference archives at the Newark Public Library in Newark, New Jersey under the heading "Newark Airport".

"Doubled Airport Flights Prove Predictions Right." *Unknown Newspaper*. 16 September 1946. Found in the newspaper clippings file of the New Jersey Reference archives at the Newark Public Library in Newark, New Jersey under the heading "Newark Airport".

Garrity, Charles. "Newark Airport Spans 30 Years of Biplane to Jets." *New Jersey Star Ledger*. 21 September 1958.

"Historic Newark Airport...It All Took Wing in 1927." *Trenton Evening Times*. 11 September 1973.

"Newark Airport Holds First Rank In East." *Unknown Newspaper*. Unknown Date. Found in the newspaper clippings file of the New Jersey Reference archives at the Newark Public Library in Newark, New Jersey under the heading "Newark Airport".

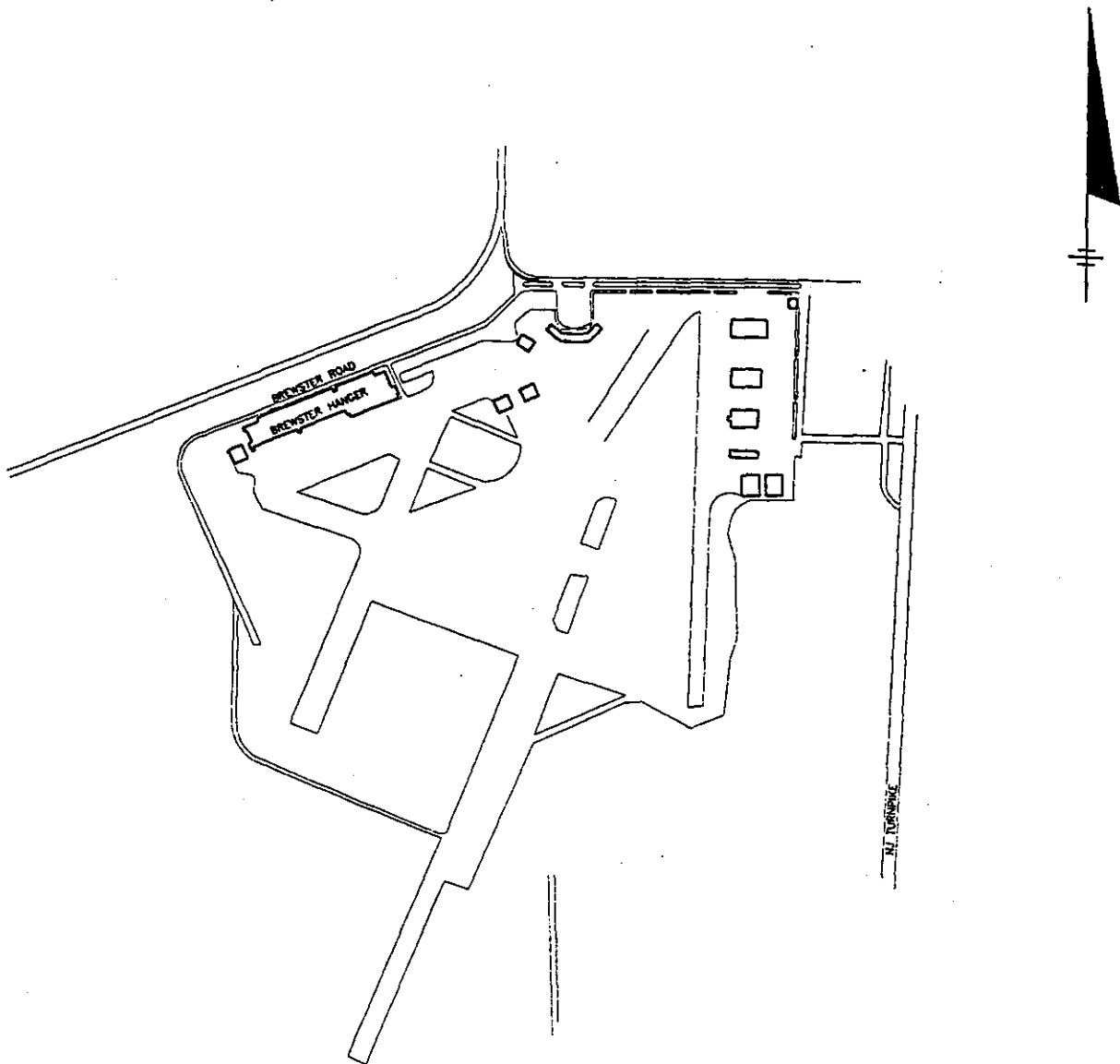
Port Authority of New York and New Jersey. *Newark International Airport*. Available on the World Wide Web (www). <<http://www.panynj.gov/aviation/ehismain.htm>>. 3 January 2000.

Scott, Owen L.. "Aviation's Greatest Gain in 1928 Was Spread of 'Air-Mindedness'." *Newark Evening News*. January 1934.

E. Likely sources not yet investigated

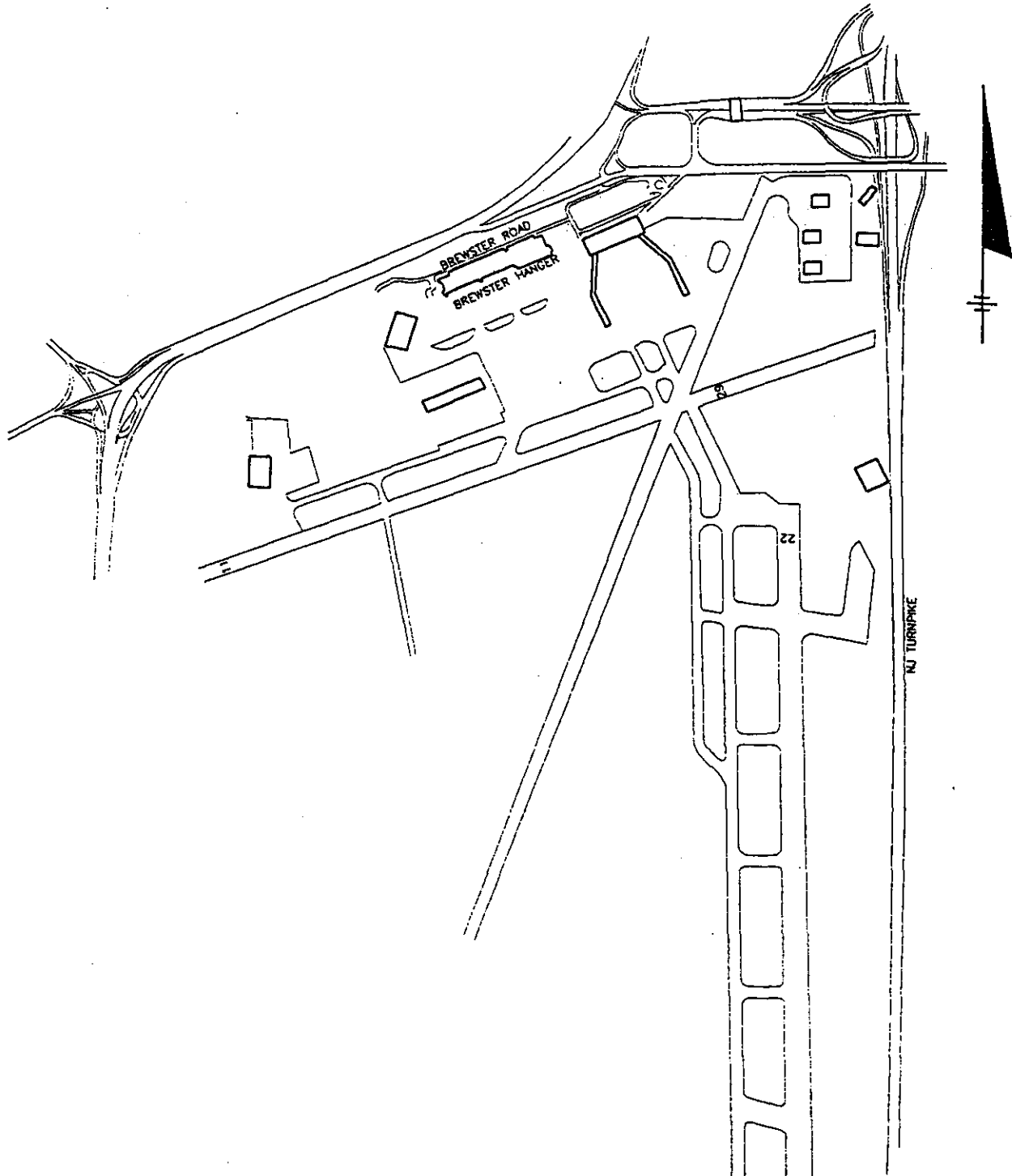
Newark Historical Society files

SKETCH OF NEWARK INTERNATIONAL AIRPORT, 1959



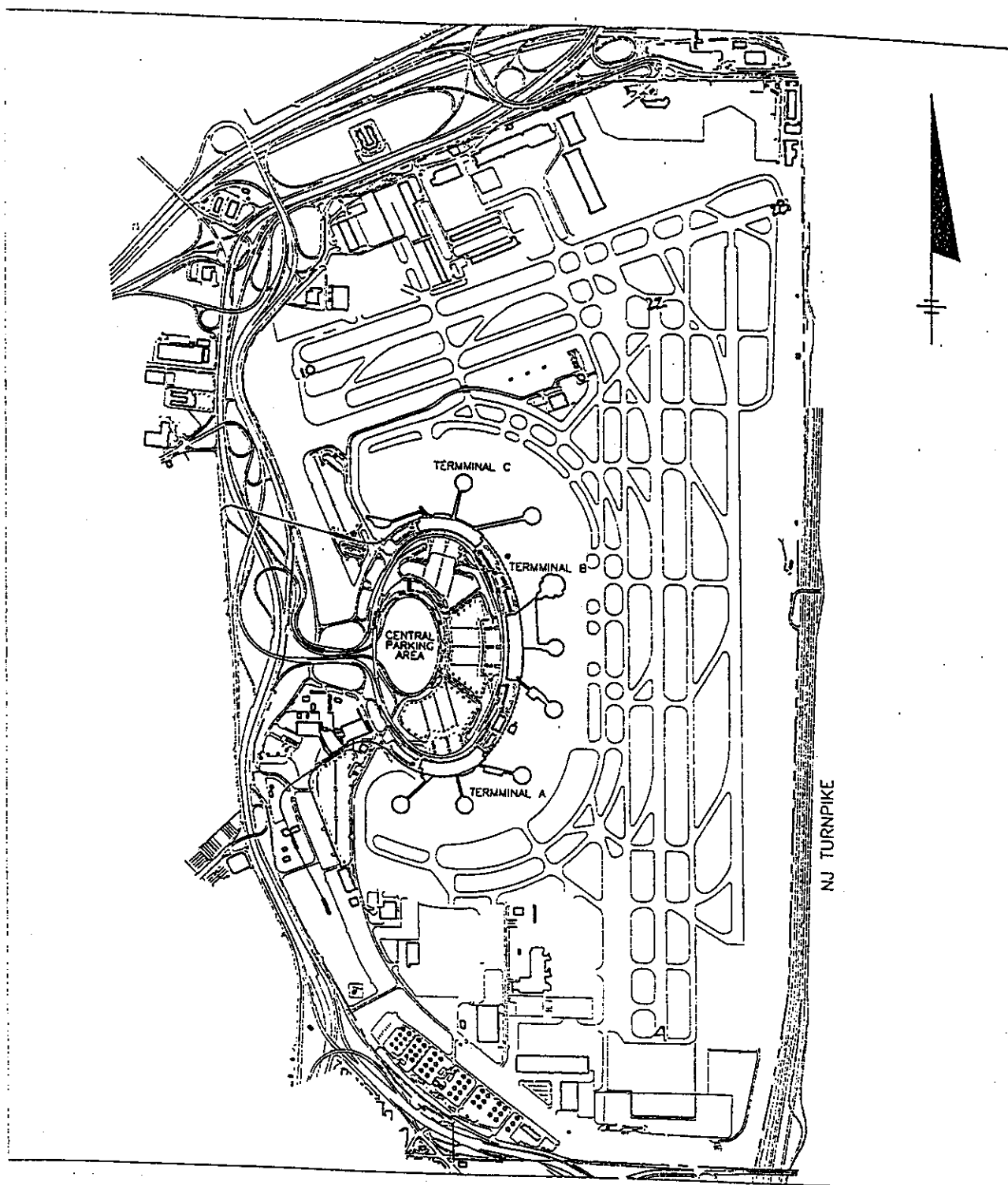
Source: Ben Tufford, O'Brien & Gere Engineers, Inc., April 2000

SKETCH OF NEWARK INTERNATIONAL AIRPORT, 1971



Source: Ben Tufford, O'Brien & Gere Engineers, Inc., April 2000

OPERATIONAL MAP OF NEWARK INTERNATIONAL AIRPORT,
DECEMBER 1998



Source: Ben Tufford, O'Brien & Gere Engineers, Inc., February 2000